

REMARKS

Applicants request favorable reconsideration and allowance of the subject application in view of the preceding amendments and the following remarks.

Claims 71, 73-75, and 77-88 are presented for consideration. Claims 71, 75, 79, 82, and 86 are independent. Claims 72 and 76 have been cancelled. Claims 71, 75, 79, and 82 have been amended. Claims 86-88 have been added to recite additional features of the subject invention. Support for these claims may be found in the original application, as filed. Therefore, no new matter has been added.

Claims 71, 72, 82, and 83 were rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,648,874 (Sawaki, et al.). Claims 73-81, 84, and 85 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Sawaki et al. Applicants submit that the cited art does not teach or suggest many features of the present invention, as recited in these claims. Therefore, these rejections are respectfully traversed. Applicants further submit that pending claims 71, 73-75, and 77-88, as presented, amplify the distinctions between the present invention and the cited art.

In one aspect of the invention, independent claim 71 recites a diffractive optical element used for the optical system of an exposure apparatus. The diffractive optical element includes an effective area, a peripheral area surrounding the effective area, and a light-shielding member composed of a laminated layer of Cr oxide and Cr disposed on a surface of the peripheral area. The light-shielding member also includes an alignment mark.

In another aspect of the invention, independent claim 75 recites a diffractive optical element used for an optical system of an exposure apparatus. The diffractive optical element comprises an effective area, a peripheral area surrounding the effective

area, and a light-shielding member composed of a material selected from the group consisting of TiC, TiN, ZrC, HfC and HfN, disposed on a surface of the peripheral area.

The light-shielding member comprises an alignment mark.

In still another aspect of the invention, independent claim 79 recites a diffractive optical element used for an optical system of an exposure apparatus. The diffractive optical element includes an effective area, a peripheral area surrounding the effective area, and a light-shielding member composed of an acrylic or epoxy light-shielding ink disposed on a face of the peripheral area. The light-shielding member comprises an alignment mark used when arranging the light-shielding member into the optical system. The light-shielding ink is not exposed to the outside of the diffractive optical element.

In yet another aspect of the invention, independent claim 82 recites a diffractive optical element used for an optical system of an exposure apparatus. The diffractive optical element includes an effective area, a peripheral area surrounding the effective area, and a light-shielding member composed of any one of (i) chromium, aluminum, molybdenum, tantalum and tungsten, (ii) a laminated structure of any one of chromium, aluminum, molybdenum, tantalum or tungsten and any one of chromium oxide, silicon oxide or aluminum oxide, (iii) a compound material of a metal and silicon, and (iv) a compound of any one of molybdenum or tungsten and silicon, silicon, or titanium oxide, disposed on a face of the peripheral area. The light-shielding member comprises an alignment mark.

Newly-presented independent claim 86 recites a diffractive optical element comprising an effective area, a peripheral area surrounding the effective area, and a light-

shielding member disposed on a surface of the peripheral area. The light-shielding member comprises an alignment mark.

Applicants submit that the cited art does not teach or suggest such features of the present invention, as recited in independent claims 71, 75, 79, 82, and 86.

In Applicant's view, Sawaki, et al. discloses an optical apparatus that has a first lens array consisting of a plurality of lenses which form a reduced image in reverse orientation and a second lens array, consisting of a plurality of lenses arranged at corresponding positions to the first lens array, that forms an erected equal magnification image from the reduced image by expanding the reduced image in the given magnification. One or more light shielding films are arranged between the first lens array and the second lens array.

Applicants submit, however, that the Sawaki, et al. patent does not teach or suggest a light-shielding member that comprises an alignment mark, in the manner of the present invention recited in the independent claims.

In particular, the production process disclosed in Sawaki, et al. entails etching a reference point at a portion of the substrate so that determining positions can be marked for a *subsequently formed* lens and *light shielding film* (see column 15, lines 58-63 and Figure 13(C) of that patent). Accordingly, Applicants submit that the reference point disclosed in the Sawaki, et al. patent is not formed in the light shielding film.

In contrast, the present invention forms an alignment mark (i.e., alignment mark 301) to be used for subsequent alignment on a part of the light shielding film (i.e., the low reflection chromium layer 205). See page 15, lines 10-21 of the specification of the present application.

For the foregoing reasons, Applicants submit that the present invention, as recited in independent claims 71, 75, 79, 82, and 86, is patentably defined over the cited art.

The dependent claims also should be deemed allowable, in their own right, for defining other patentable features of the present invention in addition to those recited in their respective independent claims. Individual consideration of these dependent claims is requested.

Applicants further submit that the instant application is in condition for allowance. Favorable reconsideration, withdrawal of the rejections set forth in the above-noted Office Action and a Notice of Allowance are requested.

Applicants' attorney, Steven E. Warner, may be reached in our Washington, D.C. office by telephone at (202) 530-1010. All correspondence should be directed to our address listed below.

Respectfully submitted,



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